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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/755,337      | 01/05/2001  | Yu-Lin Chen          | 510553.92217        | 3946             |

26371 7590 05/19/2004  
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EXAMINER

CHANEY, CAROL DIANE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

1745

DATE MAILED: 05/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 09/755,337             | CHEN, YU-LIN        |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Carol Chaney           | 1745                |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 February 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 39-76 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 39-76 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 39-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cannone, US Patent 3,556,853 in view of Chen, US Patent 5,858,574, for reasons of record. The examiner apologizes for any confusion resulting from the inadvertent error in claim numbering in the previous office action.

Cannone discloses a grid for a lead-acid battery which includes wire elements connected to nodes. As best seen in Figure 1 of the Cannone patent, the intersections of the concentric circular members 10, 11, 12, and 13 with the radial structural members 14 are nodes. Both the concentric circular members and the radial members are wires because they are slender rods. The cross-section of the radial structural members at points between the nodes will be rectangular. The cross-sections of the nodes are hexagonal.

The disclosure of Cannone differs from applicants' claims in that Cannone does not teach coating the inventive battery grid and does not specify elemental grid compositions. Chen teaches that lead-calcium alloys can be used in casting, rolling, and expanding process to make battery grids. (Column 1, lines 37-42.) Chen further teaches that coating lead calcium grids with a lead-tin alloy significantly extends the lives of batteries having the coating. (See column 2, lines 9-11.) Thus it would have been obvious to one of ordinary skill in the art to form the grid disclosed by Cannone

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from a lead-calcium alloy, because Chen teaches lead-calcium alloys are a versatile battery grid material. One of ordinary skill in the art would also coat a lead-calcium grid with a lead tin alloy because Chen teaches this will extend the life of the battery.

With regards to claim 42, any material, and any coating will be porous in the broadest meaning of the term.

With regards to claims 43-47, Chen teaches specifically that lead-tin alloy coatings having between 0.1 and 20% tin may be used, and coatings having 1 to 20 % by weight antimony and up to 2% by weight tin may be used. (Chen, column 4, lines 36-38 and 62-65.) In a specific example, a coating with a melting point of 590 °F is used. (Column 5, lines 34-35.)

With regards to claims 48-52, Chen discloses Pb-Ca-Sn alloy grids containing 0.08 wt% Ca and 1.5 wt% Sn. (Column 4, lines 46-48.)

With regards to claim 53, the limitation "at least about 0 to about 0.02 weight percent silver" is interpreted to encompass 0 weight percent silver, and thus this limitation is met by the Chen disclosure.

### ***Response to Arguments***

Applicant's arguments filed 12 February 2004 have been fully considered but they are not persuasive. Applicants assert that the combination of Cannone and Chen would not result in the subject matter recited in independent Claims 39, 54, and 65, or in corresponding dependent Claims 40-53, 55-64, and 66-76. Applicants maintain

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Cannone or Chen, alone or in any proper combination, so not disclose, teach or suggest a "wire element" that has a second transverse cross-section that is "generally rectangular" and a "first transverse cross-section" that is "non-rectangular," as recited in Claims 39-53; do not disclose, teach or suggest a wire that has a substantially rectangular cross-section at a first location and a non-rectangular cross-section at a second location as recited in Claims 55-64. and do not disclose, teach or suggest a wire element that has a generally rectangular cross-section shape at a first location and a non-rectangular cross-sectional shape at a second location, as recited in Claims 65-76.

Applicants note that in the Cannone reference "at the point at which member 11 intersects radial member 14, ...member 11 has an essentially hexagonal cross-section at the point of contact with radial member 14". From Figure 1 of the Cannone patent, radial member 14 has a transverse rectangular cross section at the points between the concentric circular structural members 10, 11, 12, and 13. Element 14 is a "wire" since it meet the definition of a wire as a "slender metal rod" given by the Merriam-Webster Dictionary at [www.m-w.com](http://www.m-w.com), a hexagonal cross section at the intersections of radial member 14 with any of elements 10, 11, 12, or 13, and has a rectangular cross sections at the points between any of elements 10 and 11, 11 and 12, or 12 and 13.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Carol Chaney  
Primary Examiner  
Art Unit 1745

cc